WHAT IS CLAIMED IS:

1. An apparatus, comprising at least a first and a second element that disperse electromagnetic radiation according to wavelength, said at least two elements having a combined dispersive characteristic such that they substantially linearly disperse the electromagnetic radiation over at least a portion of an electromagnetic spectrum.

2. The apparatus of claim 1, said at least two elements including a refractive element and a grating.

3. The apparatus of claim 2, wherein said at least two elements include a prism.

4. The apparatus of claim 1, wherein said portion of the spectrum includes wavelengths in the infrared or ultraviolet range.

5. The apparatus of claim 1, wherein said apparatus provides substantially the same magnification of the entrance slit at the detector array at different wavelengths in the spectrum.

6. The apparatus of claim 5, wherein said at least two elements are arranged so that the apparatus is substantially telecentric.

7. The apparatus of claim 6, further comprising a lens, said at least two elements including a grating placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the grating to a detector array.

8. The apparatus of claim 6, said at least two elements comprising a lens component, and a grating placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the grating to a detector.

9. The apparatus of claim 8, said at least two elements comprising a prism integral with the lens component.

10. The apparatus of claim 6, further comprising a lens and an aperture stop, said at least two elements comprising a grating, said aperture stop being located in an optical path between the grating and the lens, said aperture stop placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the aperture stop to a detector.

11. The apparatus of claim 6, further comprising an aperture stop, said at least two elements comprising a grating and a lens component, said aperture stop being located in an optical path between the grating and the lens, said aperture stop placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the aperture stop to a detector.

12. The apparatus of claim 1, further comprising a lens, said at least two elements including a prism and a grating, wherein the prism, lens and grating are separate components.

13. The apparatus of claim 1, further comprising a lens, said at least two elements including a prism and a grating, wherein any two or more of the prism, lens and grating are combined to form a unitary single optical component.

14. The apparatus of claim13, wherein the prism, lens and grating are combined to form a unitary single optical component.

15. The apparatus of claim 1, said at least two elements including a prism, a grating and a lens component integral with the prism.

16. The apparatus of claim 1, said at least two elements including a transmissive or reflective grating.

17. The apparatus of claim 1, further comprising an array of detectors, each detector sensitive for detecting a range of wavelengths of electromagnetic radiation in the spectrum from the at least two elements, and a filter corresponding to each detector in the array, such filter filtering out at least some of the wavelengths of electromagnetic radiation that are not within the range of wavelengths of electromagnetic radiation of the corresponding detector.

18. The apparatus of claim 1, further comprising an array of detectors, wherein the electromagnetic radiation at different wavelengths arrive at the array in substantially parallel rays.

19. The apparatus of claim 18, said array of detectors being substantially in a plane, wherein the rays of the electromagnetic radiation at different wavelengths arrive at the array in directions that are substantially normal to the plane.

20. The apparatus of claim 19, wherein directions of the rays of the electromagnetic radiation at different wavelengths arriving at the array are at small angles to a normal direction to the plane to avoid back reflection.

21. The apparatus of claim 1, said at least two elements comprising a prism having a surface receiving the electromagnetic radiation from a collimating lens, said surface being aspheric to compensate for geometric aberration introduced by the collimating lens.

22. An optical apparatus, comprising:

at least a first and a second element that disperse electromagnetic radiation according to wavelength, said at least two elements having a combined dispersive characteristic such that they substantially linearly disperse the electromagnetic radiation over at least a portion of an electromagnetic spectrum; and

input/output optical channels conveying electromagnetic radiation signals to or from the at least two elements, said at least two elements multiplexing or demultiplexing the electromagnetic radiation signals.

23. The apparatus of claim 22, said at least two elements including a refractive element and a grating.

24. The apparatus of claim 23, wherein said at least two elements include a prism.

25. The apparatus of claim 22, wherein said portion of the spectrum includes wavelengths in the infrared or ultraviolet range.

26. The apparatus of claim 22, wherein said apparatus provides substantially the same relative magnification of an entrance slit and an image thereof at the channels at different wavelengths in the spectrum.

27. The apparatus of claim 26, wherein said at least two elements are arranged so that the apparatus is substantially telecentric.

28. The apparatus of claim 27, further comprising a lens, said at least two elements including a grating placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the grating to channels, or from the channels to the grating.

29. The apparatus of claim 27, said at least two elements comprising a lens component, and a grating placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the grating to the channels, or from the channels to the grating.

30. The apparatus of claim 29, said at least two elements comprising a prism integral with the lens component.

31. The apparatus of claim 27, further comprising a lens and an aperture stop, said at least two elements comprising a grating, said aperture stop being located in an optical path between the grating and the lens, said aperture stop placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the aperture stop to the channels, or from the channels to the stop.

32. The apparatus of claim 27, further comprising an aperture stop, said at least two elements comprising a grating and a lens component, said aperture stop being located in an optical path between the grating and the lens, said aperture stop placed substantially at a focal point of the lens that focuses the electromagnetic radiation from the aperture stop to the channels, or from the channels to the stop.

33. The apparatus of claim 22, further comprising a lens, said at least two elements including a prism and a grating, wherein the prism, lens and grating are separate components.

34. The apparatus of claim 22, further comprising a lens, said at least two elements including a prism and a grating, wherein any two or more of the prism, lens and grating are combined to form a unitary single optical component.

35. The apparatus of claim34, wherein the prism, lens and grating are combined to form a unitary single optical component.

36. The apparatus of claim 22, said at least two elements including a prism, a grating and a lens component integral with the prism.

37. The apparatus of claim 22, said at least two elements including a transmissive or reflective grating.

38. The apparatus of claim 22, each channel carrying a wavelength component within a range of wavelengths of electromagnetic radiation in the spectrum from the at least two elements, and a filter corresponding to each channel, such filter filtering out at least some of the wavelengths of electromagnetic radiation that are not within the range of wavelengths of electromagnetic radiation of the corresponding channel.

39. The apparatus of claim 22, wherein the electromagnetic radiation at different wavelengths arrive at the channels in substantially parallel rays.

40. The apparatus of claim 39, said channels have ends substantially in a plane, wherein the rays of the electromagnetic radiation at different wavelengths arrive at or emerge from the array in directions that are substantially normal to the plane.

41. The apparatus of claim 40, wherein directions of the rays of the electromagnetic radiation at different wavelengths arriving at the array are at small angles to a normal direction to the plane to avoid back reflection.

42. The apparatus of claim 41, said at least two elements comprising a prism having a surface receiving the electromagnetic radiation from a collimating lens, said surface being aspheric to compensate for geometric aberration introduced by the collimating lens.

43. An apparatus, comprising at least a first and a second element that disperse electromagnetic radiation according to wavelength, said at least two elements having a combined dispersive characteristic such that they disperse the electromagnetic radiation over at least a portion of an electromagnetic spectrum more evenly than by only one of the two elements.

44. A method for measuring a radiation source, comprising:

passing radiation from the source to at least a first and a second element that disperse electromagnetic radiation according to wavelength, said at least two elements having a combined dispersive characteristic such that they substantially linearly disperse the electromagnetic radiation over at least a portion of an electromagnetic spectrum; and

measuring wavelength components of the radiation that is dispersed by the elements.

45. A optical method for multiplexing or demultiplexing electromagnetic radiation signals, comprising:

providing at least a first and a second element that disperse electromagnetic radiation according to wavelength, said at least two elements having a combined dispersive characteristic such that they substantially linearly disperse the electromagnetic radiation over at least a portion of an electromagnetic spectrum; and

conveying electromagnetic radiation signals to or from the at least two elements, said at least two elements multiplexing or demultiplexing the electromagnetic radiation signals.